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03/30/2004

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EXAMINER

PATEL, RAJNIKANT B

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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/813,377
Filing Date: March 30, 2004
Appellant(s): LOC ET AL.

Richard S. Finkelstein
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed April 17, 2007 appealing from the Office action mailed 11/17/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

U.S. Patent #6,449,174

Elbanhway

10/2002

U.S. Patent # 4,967,201

Rich, III

10/1990

U.S. Patent # 7,027,944

Tabaian

04/2006

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 112

1. Claims 1 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1 and 15 the phrase "the N phases is located is less thermally-sensitive than a second area of the substrate in which the second of the N-phases is located" is indefinite and unclear in light of specification, in claims claiming only a substrate, a voltage regulator converter, a voltage controller, it is not clear how "the N phases is located is less thermally-sensitive".

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 10-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elbanhawy (U.S. patent # 6,449,174) in combination with Rich, III (U.S. patent # 4,967,201) and Tabaian et al. (U. S. patent # 7,027,944). Elbanhawy disclose the claimed subject matters an apparatus (figure 1), including a voltage regulator with N-phases (Abstract, line 1-5). However Elbanhawy does not disclose the utilization of the technique for a substrate in which the first one of the N phases is located is less thermally sensitive than a second area of the substrate and first one of phases to generate more heat. Rich, III teaches the utilization of similar technique for a substrate in which the first one of the N phases is located is less thermally sensitive than a second area of the substrate (Abstract, line 1-30). The abstract discloses a heat sink (figure 3, item 60) under hot components 84 in order to conduct thermal energy away therefrom. This area of the substrate L1-L8 and 60 deemed the less thermally sensitive area of the substrate, since it conducts more heat away faster so that the

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substrate will not get hot and be damaged. The substrate includes all of the layers L1-L8 and heat-sink 60 or only layer L1-L8 will be the less thermally sensitive substrate area, due to the heat-sink 60 pulling heat away therefore the layers L1-L8 less thermally sensitive since they do not get hot. Tabaian et al. teaches it well known that different phases generate more heat than other due to mismatch in current and loads (column 1, line 20-25). It would have been obvious one having an ordinary skill in the art at the time the invention was made to modify Elbanhawy's apparatus by utilizing the technique taught by Rich, III and Tabaian et al. for the purpose of providing thermal protection to circuit components by placing the hot phases in area where more heat will be conducted away.

(10) Response to Argument

I. THE PENDING CLAIMS ARE NOT INDEFINITE UNDER 35 USC 112, 2ND

Par.

Appellant argues that "thermally sensitive" would clearly be understood by one of skill in the art examiner respectfully disagrees, Applicant points to no definition or any mention of the term in his specification. There are several meanings one can impart to the term, which consequently determine whether the claims are met by the prior art. This is the penultimate definition of unclear since the scope of the claim is unclear. For example, does "thermally sensitive" mean that the heat more readily transfers through the substrate? For example, is metal less thermally sensitive than a good heat

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insulator like glass? Or, does the term mean that the glass is more thermally sensitive because it melts before the metal when heat is applied, or because it traps and holds heat. Does less thermally sensitive mean conducting more heat or conducting less heat or not conducting any heat at all, or does it mean that the substrate response physically or changes with heat like thermistor which changes resistance with heat. Thus a less thermally sensitive area would indicate an area of the substrate that does not change with the heat or increase in the temperature, as readily as other part.

II. THE PRIOR ART SUPPORT A REJECTION UNDER 35 U.S.C.~103

Appellant argues there is no teaching for placing a phase that generates more heat in a less thermally sensitive area. This is not correct. The applied art of Elbanhawy discloses the multiphase power supply where $N=3$ which is greater than 1, as claimed in claim 1, and teaches the controlling of temperature within each phase while the combination of Rich discloses a substrate in which the heat producing components 84 are located in a less thermally sensitive area where the heat sink 60 is so that heat gets conducted away. As noted above substrate, layers L1-L8 at figure 3 of Rich are deemed less thermally sensitive due to the fact that they do not physically change or get hot since the heat-sink pull heat away therefrom. It would have been obvious to put hotter phase on the more heat conductive and thermally sensitive area in order to keep the component cool. This is well known in the industries to separate out more and less heat-conducting component and locate them accordingly, as Rich teaches. Tabaian

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phases are hotter than others, because the different phases have different current loads. Hence, it would have been obvious to cool those phases where they are simply hotter components such as those suggested by Rich.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


Rajnikant Patel RAJNIKANT B. PATEL
PRIMARY EXAMINER

Conferees:


David Blum


Karl Easthom